Remarks

Summary of Rejections

In ¶3 of the Office action, the Examiner rejected claims 1-15 and 18-25 under 35 USC §103 (a) as being unpatentable over Pickens '003 (US Patent 5,455,003).

In ¶4 of the Office action, the Examiner rejected claims 16, 17 and 26 under 35 USC§103(a) as being obvious in light of Pickens '003 in view of Rioja '686 (US Patent 5,137,686).

Discussion

In the amendment to the claims made supra, the claims remaining in the application have all been amended to refer to an aircraft component comprised of an alloy, rather than claiming the alloy.

It is acknowledged that the alloy ranges claimed in the present application have some overlap with the alloy ranges cited in Pickens '003, and that alloy compositions close to the ranges cited in Pickens '003 would be obvious to try for the cryogenic applications cited in Pickens. It is believed, however, that it would not be obvious to try such compositions for aircraft components which are subjected to high cycle stress loadings, because the cryogenic applications cited in Pickens '003 do not require resistance to failure caused by high cycle stress loadings. A space shuttle cryogenic propellant tank, for example, has a single principal stress cycle which includes being chilled down to cryogenic temperature, being loaded with propellant, being pressurized, then subjected to acceleration loads during flight, and then discarded. The tank is subjected to this stress cycle only once.

The present application, in pragraph [0028], employs the term "damage tolerant aircraft part", and it notes that damage tolerant design is "used for most of the primary structure in a transport category airfame, including but not limited to fuselage panels, wings, wing boxes, horizontal and vertical stabilizers, pressure bulkheads, and door and window frames." Damage tolerance and fatigue crack growth resistance are also discussed in paragraphs [0029], [0032], [0033], [0037], and [0044] of the present application.

Cyclical stresses experienced by various aircraft components are discussed in paragraph [0044]. In addition to the cyclical loads cited in paragraph [0044] of the application, a person skilled in the aeronautical arts will recognize that wings, control surfaces and stabilizers also experience cyclical loads due to maneuvering or to wind gusts. Wind gusts, for example, may cause major stress changes within a time less than one second. Such loads subject the wings, control surfaces and stabilizers to high cycle stresses. The number of stress cycles for such components can thus be in the millions.

Paragraph [0063] of the present application provides discussion of the tests of fatigue crack growth resistance of alloys of the present invention, which include small additions of lithium. Data for Alloy A, defined in paragraph [0055], which contains no lithium, are also presented for comparison. Fatigue data for alloys of the present invention, in comparison with Alloy A are presented in Figures 10,11 and 12.

In contrast, Pickens '003 does not teach an alloy having good damage tolerance, or good resistance to fatigue crack growth. The only mention of fatigue in Pickens '003 is for sample preparation. Example 1 in Pickens cites measurement of fracture toughness on "fatigue precracked compact tension specimens", and Example 13 in Pickens '003 cites measurements made on "fatigue precracked" specimens. Neither Example 1 nor Example 13 of Pickens '003 fall within the composition ranges claimed in the present application, and furthermore, nothing in the Pickens '003 patent suggests that the examples have good fatigue crack growth resistance.

It is noted that the Examiner, on page 3 of her action did discuss fatigue crack growth resistance. Her statements were germane to the claims as they stood at that time, which were for the alloy compositions. Now, however, all the claims refer to aircraft components.

At the bottom of Page 3 of her action, the Examiner noted that "The prima facie case can be rebutted by evidence showing that the prior art products do not necessarily posses the characteristics of the claimed product".

We apply this doctrine to the present case noting that an alloy composition intended for cryogenic applications does not posses the characteristics of an aircraft component comprised of that alloy. The cryogenic alloy product, for example, does not have the geometrical and dimensional characteristics of the aircraft component.

It is thus believed, that the claims presently in the application, insofar as they include alloys having composition ranges overlapping Pickens '003, constitute a new use for the alloy. It is thus believed that claims 1-15 and 18-24, as amended supra, are not obvious in light of Pickens '003. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 1-15 and 18-24 in light of Pickens '003.

It is noted that in the amendment to the claims made supra, that claims 16, 17 and 25-26 have been withdrawn from consideration. Thus, the claims remaining in the application are 1-15 and 18-24.

It is respectfully submitted that the application is now in condition for allowance, and an early notice of allowance is earnestly solicited. If the Examiner has further questions regarding the application, a telephone call to Applicants' undersigned agent at (724) 337-6165 would be appreciated.

Respectfully Submitted,

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